

CLAIMS

1. A mounting method comprising the steps of:

positioning objects being bonded to each other, which face each other with a gap, relative to each other;

moving a movable wall positioned around both objects until coming into contact with one object holding means to form a local chamber having a local enclosed space and enclosing both objects in said local chamber;

reducing a pressure in said local chamber to set an inside of said local chamber at a predetermined vacuum condition; and

moving said object holding means in a direction for reducing a volume of said local chamber and moving said movable wall following the movement of said object holding means and bonding both objects to each other by pressing.

2. The mounting method according to claim 1, wherein surfaces being bonded of said objects are cleaned in said local chamber by an energy wave or energy particle beam after the pressure in said local chamber is reduced to set the inside of said local chamber at said predetermined vacuum condition, and thereafter, said object holding means and said movable wall following said object holding means are moved and both objects are bonded to each other by pressing.

3. The mounting method according to claim 2, wherein said cleaning by said energy wave or energy particle beam is carried out under said predetermined vacuum condition.

4. The mounting method according to claim 2, wherein said cleaning by said energy wave or energy particle beam is carried out after reducing the pressure in said local

chamber to set the inside of said local chamber at said predetermined vacuum condition, and after the cleaning and before the bonding, the inside atmosphere of said local chamber is replaced with an atmospheric inert or oxidizing gas.

5. The mounting method according to claim 2, wherein said energy wave or energy particle beam is a plasma.

6. The mounting method according to claim 1, wherein a sealing material is applied onto a surface of one object before or after the pressure in said local chamber is reduced to set the inside of said local chamber at said predetermined vacuum condition, and at the sealing material applied condition and under said predetermined vacuum condition, said object holding means and said movable wall following said object holding means are moved and bonding parts of both objects are bonded to each other in said sealing material by pressing.

7. The mounting method according to claim 6, wherein said sealing material is a non-conductive paste or an anisotropic conductive paste.

8. The mounting method according to claim 1, wherein the inside of said local chamber is set at an atmosphere condition of a specified gas after the pressure in said local chamber is reduced to set the inside of said local chamber at said predetermined vacuum condition, and under said specified gas atmosphere condition, said object holding means and said movable wall following said object holding means are moved and both objects are bonded to each other by pressing.

9. The mounting method according to claim 8, wherein the inside of said local

chamber is set at said specified gas atmosphere condition with an atmospheric pressure.

10. The mounting method according to claim 8, wherein an inert gas, a non-oxidizing gas, a reducing gas or a substitutional gas is used as said specified gas.

11. The mounting method according to claim 1, wherein, in said step of setting said predetermined vacuum condition, the inside of said local chamber is sealed against outside by a contact force of said movable wall to said object holding means.

12. The mounting method according to claim 1, wherein, when said object holding means and said movable wall following said object holding means are moved, a force acting to said object holding means by the pressure in said local chamber and a contact force of said movable wall to said object holding means are substantially balanced.

13. The mounting method according to claim 1, wherein, when said object holding means and said movable wall following said object holding means are moved and one object is pressed to the other object, the pressing is performed utilizing the pressure in said local chamber by reducing a contact force of said movable wall to said object holding means.

14. A mounting device for bonding both objects to each other by pressing after positioning said objects relative to each other with a gap, said mounting device comprising;

a movable wall positioned around said objects, capable of moving until coming into contact with one object holding means to form a local chamber having a local

enclosed space capable of enclosing both objects in said local chamber, and capable of moving in a direction for reducing a volume of said local chamber following the movement of said object holding means; and

a vacuum suction means for reducing a pressure in said local chamber to set an inside of said local chamber at a predetermined vacuum condition.

15. The mounting device according to claim 14, wherein said mounting device has a cylinder means for moving said movable wall.

16. The mounting device according to claim 14, wherein a seal member capable of being elastically deformed is provided at a tip of said movable wall.

17. The mounting device according to claim 14, wherein said mounting device has means for cleaning surfaces being bonded of said objects in said local chamber by an energy wave or energy particle beam.

18. The mounting device according to claim 17, wherein said mounting device has a gas supply means for replacing the inside of said local chamber with an atmosphere of an inert gas or a non-oxidizing gas at the time of and/or after cleaning by said energy wave or energy particle beam.

19. The mounting device according to claim 17, wherein said energy wave or energy particle beam is a plasma.

20. The mounting device according to claim 19, wherein each of said object holding means has an electrode for generating a plasma.

21. The mounting device according to claim 19, wherein said mounting device has means for applying a sealing material onto a surface of one object.

22. The mounting device according to claim 21, wherein said sealing material is a non-conductive paste or an anisotropic conductive paste.

23. The mounting device according to claim 14, wherein said mounting device has a specified gas supply means for setting the inside of said local chamber at an atmosphere condition of a specified gas after the pressure in said local chamber is reduced to set the inside of said local chamber at said predetermined vacuum condition.

24. The mounting device according to claim 23, wherein said specified gas is an inert gas, a non-oxidizing gas, a reducing gas or a substitutional gas.

25. The mounting device according to claim 14, wherein at least one object holding means has a heating means.

26. The mounting device according to claim 14, wherein at least one object holding means has an electrostatic chucking means for holding said object electrostatically.